G. M. 1908

165 of 08

Sr. No 1-16.

Application of Mr. William Charles Stephens of England for leave to file a Specification in respect of his Invention for Improvements in or connected with percussive Rock Drills

G. R. S. 59]

34128

GENERAL AND REVENUE SECRETARIAT.

1908/9
(Genl. Mis.)

File No. 165-08

Serial Nos. 1–16

Papers Filed.

Month January 1908.

SUBJECT.

Application of Mr. William Charles Stephens of England, for leave to file a Specification in re his Invention for "Improvements in or connected with percussion rock drills".

PREVIOUS REFERENCES.	LATER REFERENCES.

Inventions Rights Act 1 of 1908 & 09

G.R.S.11] 1908-09

GENERAL AND REVENUE SECRETARIAT

(Gen. Mis.)

NOTES.

S. H. File No. 165-08

FILE HEADING.

Invention of Mr. William Charles Stephens of Carn Brea in the county of Cornwall England, Engineer for "Improvements in or connected with percussion rock drills"

From

De. Penning & De. Penning, Calcutta

No. — Dated 26/10/08 Received

Diary No. 1814 | Enclos. 2 | Spare Copies | Serial No. 1

BRIEF ABSTRACT OF LETTER.

Forwards an application of Mr William Charles Stephens of England, for leave to file a specification in Re his invention for "Improvements in or connected with percussion rock drills".

NOTES AND ORDERS.

The application will be forwarded to the State Geologist in Mysore for report under sec: 6 of the Improvements & Designs Regn. 1894. The fee of Rs 10/- received will be sent to the Huzur Treasury. Drafts put up

NOTES—First sheet

GPB—30,000—3-4-07.

G. R. S. 12]
General and Revenue Secretariat.

G.M. File No. 165 of 1908-09

Serial No.	
	for approval dl 31/10/08 VS Issue SPK 3/11/08.
2	To the State Geologist G 2760 dt 9.11.08 Forwards the applⁿ recd in Sl 1.
3	To the Offr in Ch. of State Huzur Treasury G 2761 dt 9.11.08 Fds Rs 10 recd with Sl ~~to~~ 1 & requests acknowledgment.
4	From the Officer in charge of the State Huzur Treasury No 103 dated the 10th Nov: 1908 Acknowledges the receipt of Rs10/- sent with Sl. 3. Subd. The receipt of the report from the State Geologist may be awaited dl 12/11/08 VS Ys. SPK 12/11/08
5	From the State Geologist No 1429 dt 24.11.08 — Returns the applⁿ sent with Sl 2 with the remark that the invention contains several new & useful features which are clearly described & suitably constructed & observes that the leave applied for maybe granted. Draft order granting leave to file Specification ~~as well as~~ and a letter to the Patent Agents forwarding the order ~~and~~ put up for approval P.T.O.

Sw 31/11/08

NOTE—Contn. sheet.

GPB—50,000—13-5 08

G. R. S. 12]
General and Revenue Secretariat.

Gm File No. 165 of 1908/9

Serial No.	
	In this connection it is represented that as required by the Section 120 of Inventions Regulation ~~a copy~~ ~~the~~ every application has to be entered in the Register of Inventions. The practice hitherto was to copy out the whole application in ms., but in view of the amount of time involved it is suggested that the same purpose will be served by pasting the copy of the application ~~read from the app~~ in the Register of Inventions. ~~Four~~ four additional copies of the Specification are req'd subsequently to the grant of leave & of these 3 copies are distributed one copy being thus available for the file. It is thus seen that no inconvenience is felt in having ~~to~~ the application pasted up in the Invention Register - If approved this procedure will be followed in this as well as other cases.
	1/11/08 Subd: VS. Issue draft. BOS 1/11/08
6.	To Messrs. De Penning & De Penning, Rs. C. 3399 of 4.12.08 - Authorizes the applicant to file the specification refd to in Sl. 1 above.
7.	To —do—, Rs. C. 3400 of 4.12.08 - With refce to Sl. 1 above, encloses Govt. Order (Sl. 6) & requests that the order may be communicated to the applicant & an acknowledgment sent to this office.

Hag Q.

Sl 285

Please let me see it when it is received

Sept 1/12/08

NOTE—Contn. sheet.

GPB—50,000—13-5-08

Serial No.	
2634	8 From Messrs De Penning & De Penning. No 24 of 19/12/08

Forwards 5 copies of the specification together with the necessary fee of Rs 30.

1) The certificate at the foot of the copy of the order granting leave to file the specification (fair, as well as upon draft) requires signature.

(2) The usual drafts are submitted for approval.

VS
30.12.08

Issue
CBB
4/1/09

9. To the Officer in charge S.H.Tg. No G.3919. of 7-1-09.
Remits Rs 30 & requests an ackt.

10 To the Compiler, Mysore Gazette No G3920 of 7-1-09
Notifies the filing of the specification.

11 To Messrs De Penning & De Penning, No G3921 of 7-1-09
Forwards a copy of sl.10 & returns the order granting leave.

12 To the State Geologist, Chief Engr, & Supdt Govt museum.
No G.3922-4 of 7-1-09. Forwards to each a copy of the specification & requests an ackt.

To the Translator Section for translation sl.10

Such notes need not be translated as per orders of the Under Secy in G.O. 166 of 08-09.

RL
13-1-09

Orders are solicited on the proposal

NOTE—Contn. sheet.

GPB—50,000—13-5 08

G. R. S. 12]
General and Revenue Secretariat.

G. R. File No. 165 of 1908

Serial No.	
	Proposal made (vide previous page (3)) in regard to the copying of the specifications in the Invention Regr.
	G. 14/1/09 VS. The copy of the specification may be pasted in the register
	14/1/09
13	From the Officer in Ch of S. H. Trg. Receipt No. 195 of 8-1-09
	Acknowledges receipt of P.L. to be forwarded with P.L. 9
14	From the Supt, Govt Museum - No. 115 of 8-1-09
15	" " Chief Engr - - No. 207 of 12-1-09
16	" " State Geologist No. 1813 of 18-1-09.
	Acknowledge receipt of the Spec" forwarded with P.L. 12.
	The papers may now be filed.
	G. 20/1/09 VS
	file 4-2-09
	5.2.09.

D Nos 2877, 2872, 2948, 3051

NOTE—Contn. sheet.

GPB—50,000—13-5-08

Recd 29/10/08

19 Watkins Lane, Howrah.

C.M. 165 of 1908 Calcutta the 26th October 1908

S C 1

D 1814

To

The Secretary to the Government
of His Highness the Maharaja of Mysore
General + Revenue Department

Sir

We have the honour to enclose an Application from William Charles Stephens, of Carn Brea, in the County of Cornwall, England, Engineer, dated the 24th day of September 1908, for "Improvements in or connected with percussive rock drills" We also forward the fee thereon of Rupees ten, and shall feel obliged by the order granting leave to file the Specifications being sent to us in due course.

We have the honour to be
Sir
Your most obedient servants
DePenning & DePenning

DEPENNING & DEPENNING
PATENT AGENTS
CALCUTTA.

CHARTERED PATENT AGENTS
G.F.REDFERN & Co.
ESTAB? 1830.
4.SOUTH STREET. FINSBURY. LONDON.

T o

THE DEWAN OF MYSORE.

The application of William Charles Stephens, of Carn Brea, in the County of Cornwall, England, Engineer, for leave to file a Specification under Part 1 of the Inventions and Designs Regulation, 1894.

1. The applicant is in possession of an Invention for "IMPROVEMENTS IN OR CONNECTED WITH PERCUSSIVE ROCK DRILLS"; he is the inventor thereof; and to the best of his information and belief, the invention is new within the meaning of Part 1 of the Inventions and Designs Regulation, 1894; and no circumstance exists which, if the applicant be authorized to file a Specification and files it in accordance with that Part, will disentitle him to an Exclusive Privilege thereunder in respect of the Invention.

2. The following is a description of the Invention in respect of which application has been made for a Patent in the United Kingdom No. 7630, dated April 6th, 1908, see Journal No. 1005, page 552, and Provisional Protection was allowed thereon the 31st. March, 1908. An application for Patent in British India has also been made, No 432 of 1908

My invention relates to percussive rock drills of the hammer type and to that class of such drill wherein the feed motion is automatically effected by

air pressure, the chief object of my invention being to construct a drill of this class which is considerably shorter than drills of the same class as heretofore constructed and wherein the feed cylinder has been arranged behind and in alignment with the hammer cylinder, the advantages of a short drill being not only that the drill may be worked in more cramped and narrow places or galleries than the longer class of drill but that a relatively long hole can be bored by means of a single drill bit and without the necessity for moving the support or fixing for the drill.

According to my invention the feed cylinder instead of being arranged behind and in alignment with the hammer cylinder is arranged parallel or side by side with the same and preferably beneath it, the said feed cylinder being adapted to slide upon a suitable cradle to which is also anchored or secured the rod of the piston within the feed cylinder.

To enable my invention to be fully understood I will describe it by reference to the accompanying drawing, in which:-

Figure 1 is a longitudinal sectional elevation of a percussive rock-drill constructed according to this invention and adapted to carry a hollow drill for the supply of water to the bore-hole.

Figure 2 is a sectional plan, and

Figure 3 a sectional side elevation thereof.

Figures 4 and 5 are respectively a front-end view and a rear end sectional view of the drill.

Figure 6 is a section on the line 6-6 figure 2, and

Figure 7 is a section on the line 7-7, figure 4.

Figure 8 is a section on the line 8-8, figure 2 and

Figures 9 and 10 are respectively sections on the lines 9-9 and 10-10 figure 8.

Figure 11 is a similar view to figure 10 showing a different position of the parts.

Figure 12 is a section on the line 12-12, figure 1 and

Figure 13 is an enlarged section on the line 13-13, figure 2.

Figure 14 is a plan of the cradle detached.

Figures 15 and 16 are views at right angles of a tool for removing the drill bit from its holder.

a is the main or hammer cylinder, b the piston thereof, and c the valve for controlling the supply of motive fluid to the said piston from the passage c' all of which parts are of usual construction.

d is the feed cylinder arranged parallel with the cylinder a and preferably beneath it and e is the cradle upon which the cylinder d is adapted to slide in guides e', e'. f is the piston of the feed cylinder the rod f' of which is anchored or secured to a bracket f^2 on the back of the cradle. This piston may be of any suitable type but is advantageously of the type wherein the pressure fluid acts behind the piston rings to hold them in close contact with the surface of the cylinder to prevent leakage, as shown clearly in figure 1.

The motive fluid is admitted in front of the piston f through a port f^3 from a distributing tap or cock hereinafter described, so that the pressure acting against the said piston and the front of the

feed cylinder serves to push the said cylinder together with the hammer cylinder forwards.

The cradle e is not permanently fixed to the support g for carrying the drill but is made movable thereon so that when the hammer and feed cylinders have been moved forward to an extent which is limited by the length of the cradle, the said cradle, which is normally locked to its support may be temporarily released therefrom to allow of its being pushed forwards upon the said support to permit of the cylinders again being fed forward in the cradle to increase the depth of the hole being drilled. It will thus be understood that a hole may be drilled the length of which is practically twice as great as the amount of movement provided for in the cradle, and this without changing the drill bit, as during the time that the cradle is being pushed forwards, as hereinbefore described, the drill bit will be bearing against the back of the hole and so prevent the cylinders from being pushed forward with the cradle.

Any suitable means may be provided for locking the cradle e to its support g. In practice I find it advantageous to provide in conjunction with the cradle guides e', e' a bolt h having a serrated or notched head h' which engages with corresponding serrations h^2, h^2 formed on the side of the cradle as shewn clearly in figure 14, the said bolt, when tightened up, locking the cradle e and support g together.

The bolt h has arranged in conjunction with it a spring i, the normal tendency of which is to disengage the serrated head h' from the cradle serrations h^2 when the tightening nut i' is released in order to obviate the necessity for moving the bolt by hand, and

the tightening bolt h and nut i' are provided with a quick thread so that a slight turn of the said nut will be sufficient to allow of the disengagement.

The cradle support g is advantageously formed with a conical base g' which fits into a correspondingly shaped socket j on the bracket j' by means of which the drill is carried on the usual supporting bar or stand k, this arrangement of cone and socket allowing of the ready adjustment of the drill.

The bolster l against which the hammer piston b operates and which carries the drill bit m is rotated to twist the bit by means of gearing, a series of teeth n around the bolster being engaged by a gear wheel n' mounted on a telescopic shaft o, the telescoping sections o', o^2 thereof being secured respectively to the said gear wheel n' and to the bracket f^3 upon the cradle e so that the shaft o will extend as the feed proceeds. The two sections of the telescopic shaft are connected together in such a manner that whilst capable of moving longitudinally there is no relative motion of rotation between them. In the drawings this is effected by a key o^3 on the part o' engaging a keyway o^4 in the part o^2. The portion o^2 ~~engaging~~ of the shaft o carried by the cradle e is provided with a handle or lever p for imparting rotary motion as the drilling proceeds.

For supplying water to the hollow drill m I advantageously provide the following arrangement, that is to say, around the bolster l within the head a' I form a recess q into which the water is delivered through a passage r from the distributing tap or cock hereinafter described.

In the said groove or channel q I arrange a ring s grooved on its inner and outer surfaces, the said grooves being connected by holes s' so that water passing from the passage r flows around the outer groove and through the holes s' to the inner groove, holes t being provided in the bolster so that the water can then flow into the central hole t' communicating with the bit m. The ring s is located between two pieces of packing u, u a packing gland u' also entering the recess q to maintain the said packings tight around the bolster. Y is a groove formed in the head a' and open to the air by holes v', v' so that any leakage of water past the packings u, u can escape. The chamber a^2 in the head a' in which the teeth n on the bolster are located is also provided with a piece of packing w and metal washer w' to prevent access of any water.

For controlling the supply of pressure fluid to the main piston and feed piston and of water to the drill bit m I employ a single tap or cock x having inlets x' and x^2 for the supply of the pressure fluid and water respectively. The plug x^3 of the cock is formed with recesses x^4 and x^5, the recess x^4 being designed to connect the inlet x' with the port x^6 which is formed in one with the ports c' and f^3 for supplying the main and feed cylinders whilst the recess x^5 is designed to bring the inlet x^2 into communication with the passage r to the drill bit m. The recess x^5 is so arranged relatively with the recess x^4 that when the plug x^3 is turned slightly, when starting the drill, the water supply is first effected, the water passing to the cutting edges of the bit before the drill com-

mences to work, and thus ensuring the free flow of water taking place before striking the rock to be drilled so that cut portions of rock are prevented from choking the hole in the bit. By further rotation of the plug x^3 the pressure fluid is then admitted to the cylinders a and d and the drill then commences to operate the water being full on. If it is found that the water supply is excessive I provide a screw valve or regulator x^7 in the inlet x^2 so that the supply can be diminished.

To prevent water leaking around the drill shank within the drill holder portion of the bolster, I provide a conical hole m' in the said holder, and I form the said bit with a correspondingly shaped shank m^3, which when jammed back into the hole m', makes a water tight joint.

For the extraction of this form of drill bit from the holder, I employ a collar m^3 on the drill bit, and I employ a forked wedge m^4 figures 15 and 16, which is placed between the said collar and the nose of the drill holder the fork embracing the drill shank. By a simple tap with a hammer the wedge forces the collar away from the drill holder, and so extracts the drill bit.

Although I have described the tap x in combination with my improved drill, the arrangement for preventing leakage between the bit and its holder and the means for extracting the bit from the holder I make no claim to these in this specification as they form the subject of another application of even date herewith.

I sometimes apply to the rear end of the hammer cylinder a clip z, which embraces either the rod of the feed piston, or the portion o^2 of the telescopic

shaft o, in the drawings it is shown embracing the latter, the chief function of this clip being to support the weight of the cylinder a to prevent its sliding through the cradle c when changing bits whilst boring holes at angles below or above the horizontal, and thus obviating the necessity for the operator to hold up the weight of the machine when changing the drill bit, or pointing the drill to the various angles; z' is a screw for gripping the jaws of the clip on the rod o^3. The said clip also acts as a brake when boring down holes in soft rock, to prevent too rapid feeding under these conditions.

Having now fully described and ascertained my said invention and the manner in which it is to be performed, I declare that what I claim is:-

1. In a percussive rock drill of the hammer type and wherein the feed motion is automatically effected by air pressure, the arrangement of the feed cylinder and hammer cylinder side by side and parallel with each other for the purpose of shortening the drill, substantially as described.

2. In a percussive rock drill of the hammer type wherein the feed is automatically effected by air pressure and wherein the feed and hammer cylinders are arranged side by side, mounting the said cylinder in a cradle to which the piston of the feed cylinder is attached and so that the cylinders can move relatively with the said piston upon the cradle, substantially as described.

3. In a percussive rock drill of the hammer type and wherein the feed is automatically effected by air pressure, and wherein the feed and hammer cylinders are arranged side by side, the combination with the feed and hammer cylinders and with the cradle in which the said cylinders slide, of a support in which the said cradle with the cylinders upon it is adjustable, sub-

stantially as described.

In a percussive rock drill of the hammer type and wherein the feed is automatically effected by air pressure, and wherein the feed and hammer cylinders are arranged side by side, the combination with the feed and hammer cylinders and with the cradle in which the said cylinders slide, of a support in which the said cradle with the cylinders upon it is adjustable, the said support being provided with a bolt for tightening it upon the cradle and the said bolt provided with a serrated head designed to engage with corresponding serrations on the side of the cradle for fixing the said cradle in any position relatively with the support substantially as described.

5. In a percussive rock drill of the hammer type and wherein the feed is automatically effected by air pressure and wherein the feed and hammer cylinders are arranged side by side, the combination with the feed and hammer cylinders, of a cradle in which the said cylinders slide and a support in which the said cradle is adjustable a conical base upon the said support fitting a correspondingly shaped socket on the bracket by means of which the drill is carried on the usual supporting bar or stand so that the drill can be readily moved to any position, substantially as described.

6. In a percussive rock drill of the hammer type and wherein the feed is automatically effected by air pressure, and wherein the feed and hammer cylinders are arranged side by side, the combination with the feed and hammer cylinders and with the cradle in which the said cylinders slide of gearing for rotating the drill bit and of a telescoping shaft for operating the said gearing, substantially as described.

7. In a percussive rock drill of the kind wherein a hammer cylinder and feed cylinder are arranged side by side in a cradle the provision of a clip for locking the cylinders to the cradle when the air supply is shut off from the feed cylinder and to act as a brake when boring holes in soft rock, substantially as described.

8. A percussive rock drill constructed arranged and operating substantially as hereinbefore described and illustrated in the accompanying drawings.

3. The applicant, therefore, applies for leave to file a Specification of the invention pursuant to Part I of The Mysore Inventions and Designs Regulation, 1894.

Dated this 24th day of Sept^r. 1908.

W. C. Stephens

I, William Charles Stephens, the applicant above named do declare that what is stated in this Application is true to my knowledge, except as to matters stated on information and belief, and as to those matters I believe them to be true.

W. C. Stephens

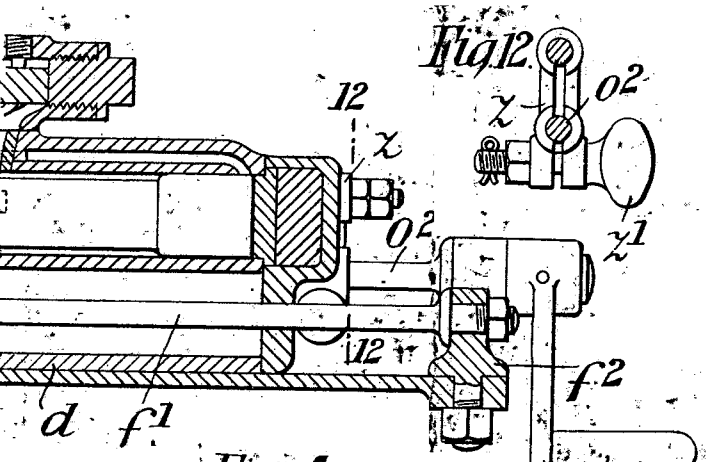


Fig. 12

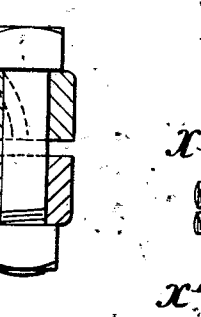
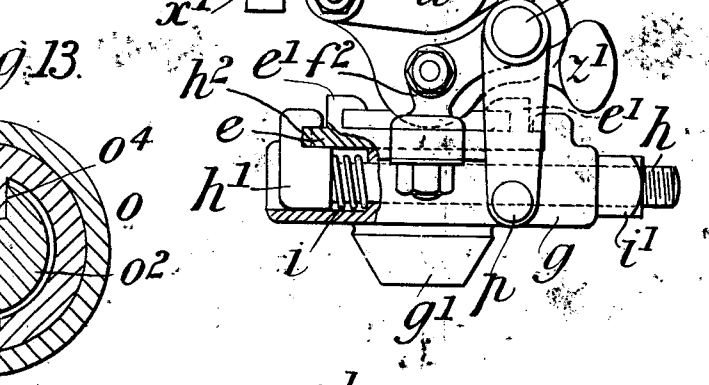
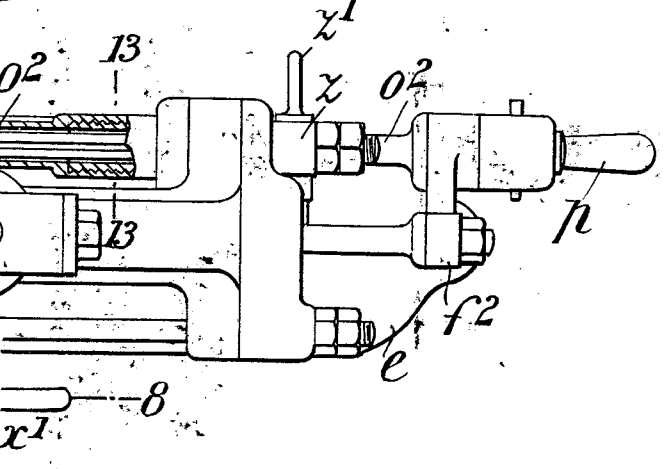
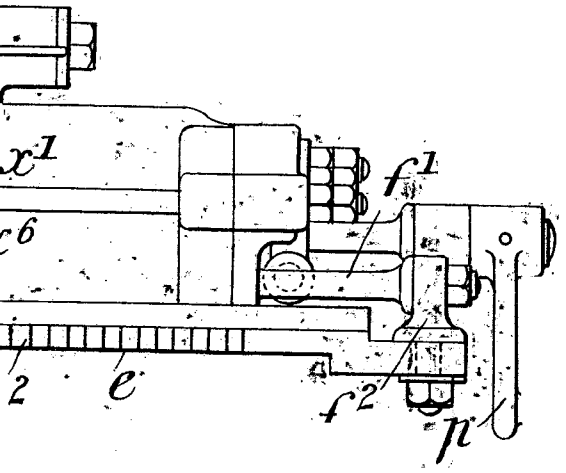


Fig. 5



g. 13.





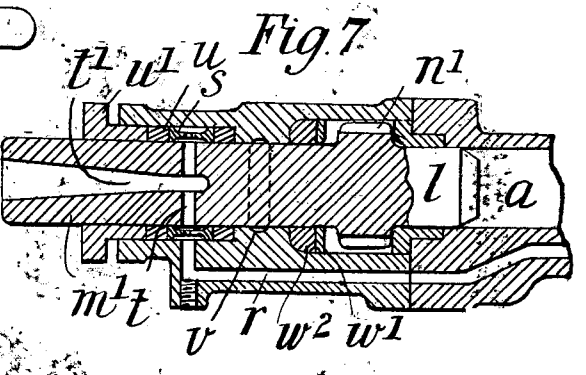


Fig. 7.

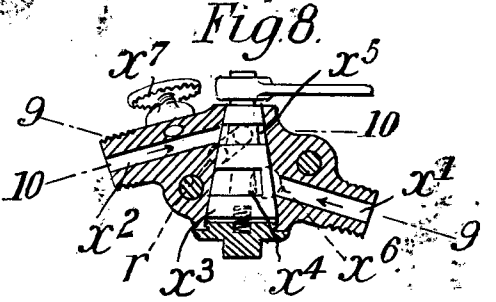


Fig. 8.

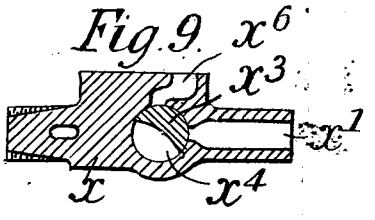


Fig. 9.

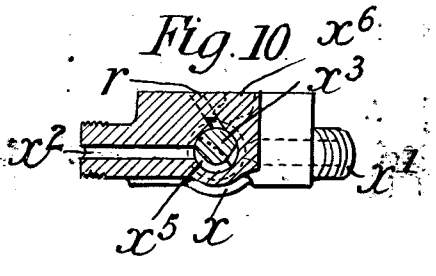


Fig. 10.

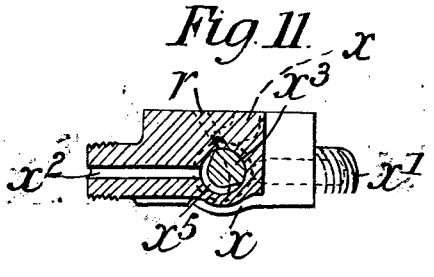


Fig. 11.

Fig.15. Fig.16.

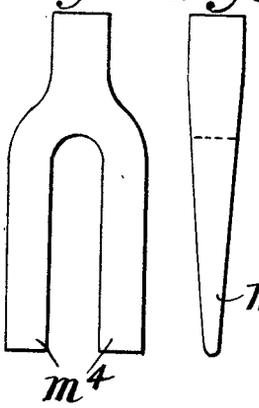


Fig.1.

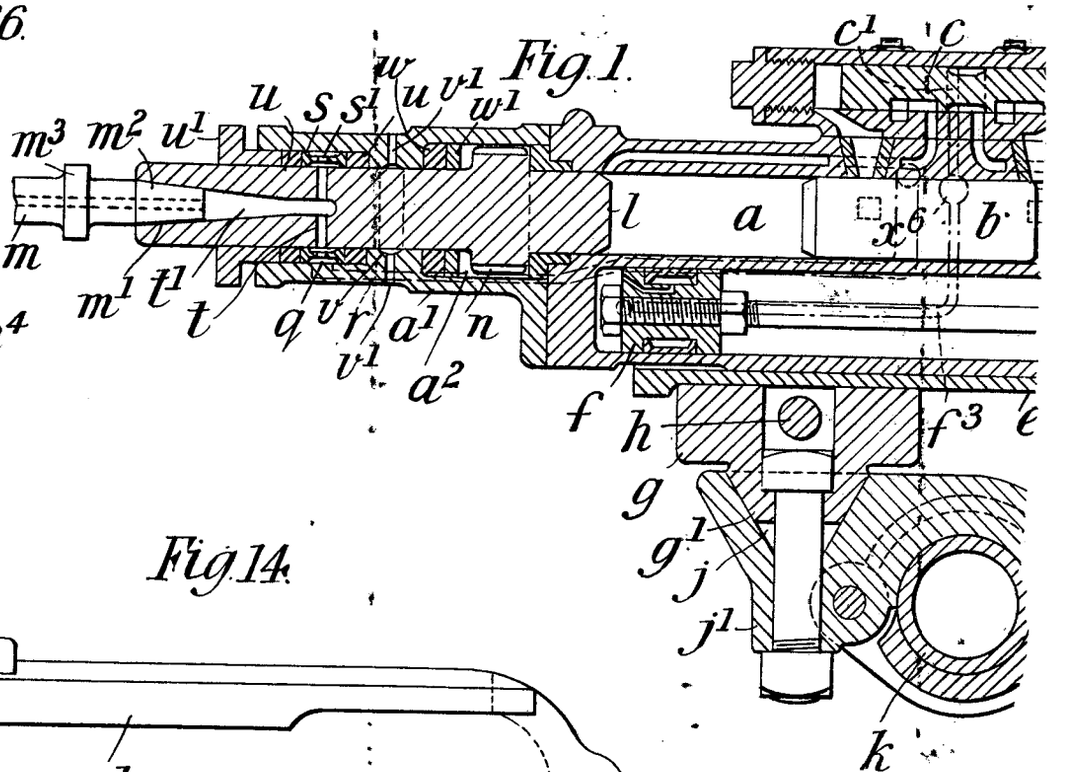
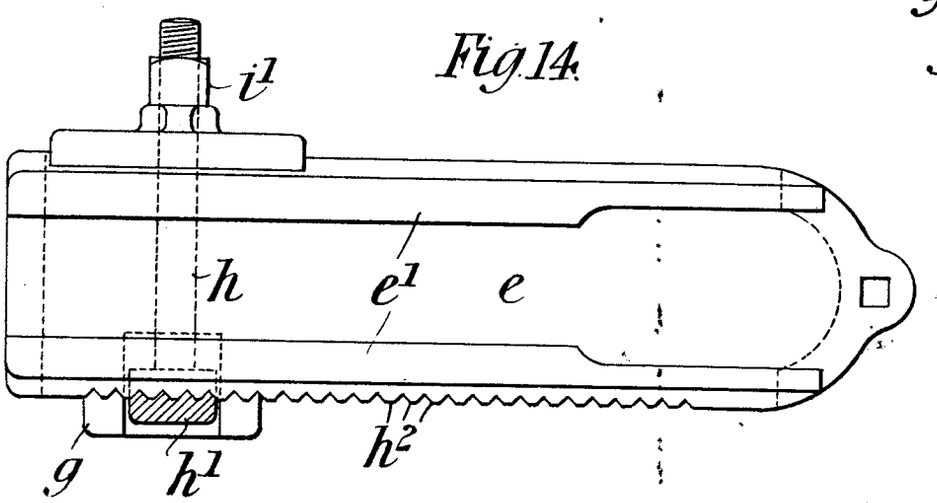


Fig.14.



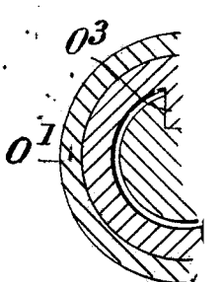


Fig.6.

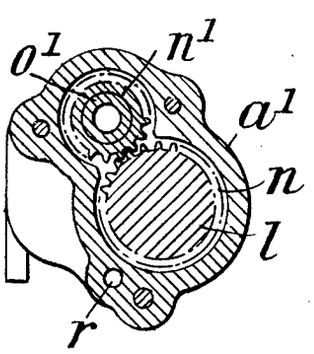


Fig.2.

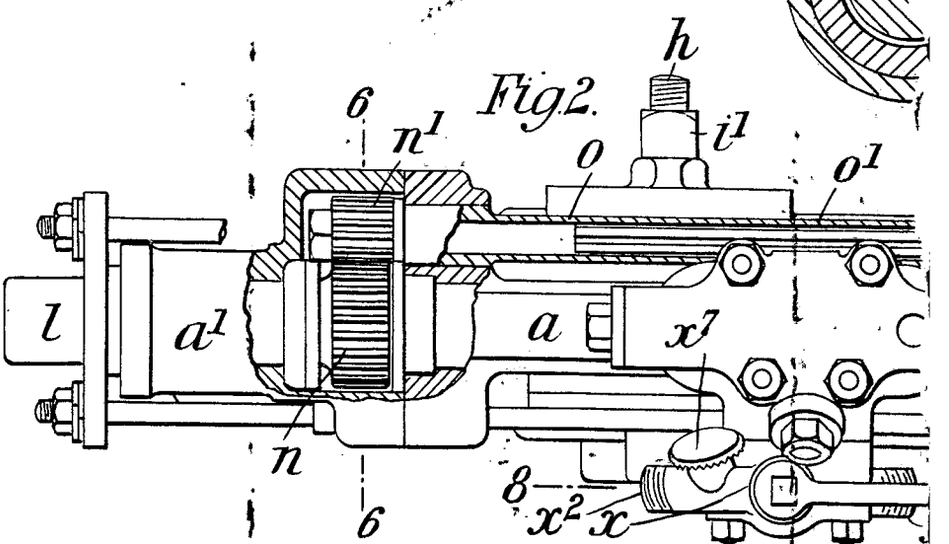


Fig.4.

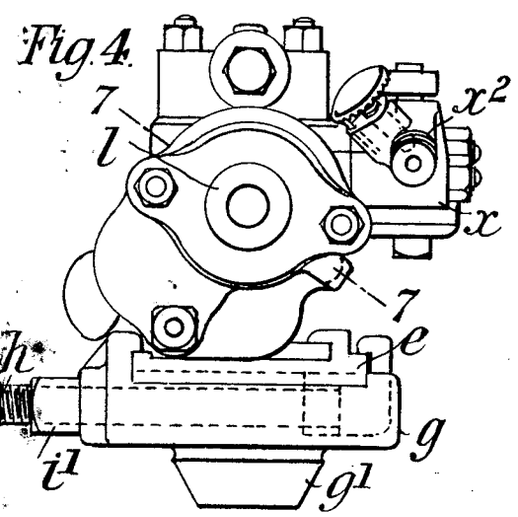
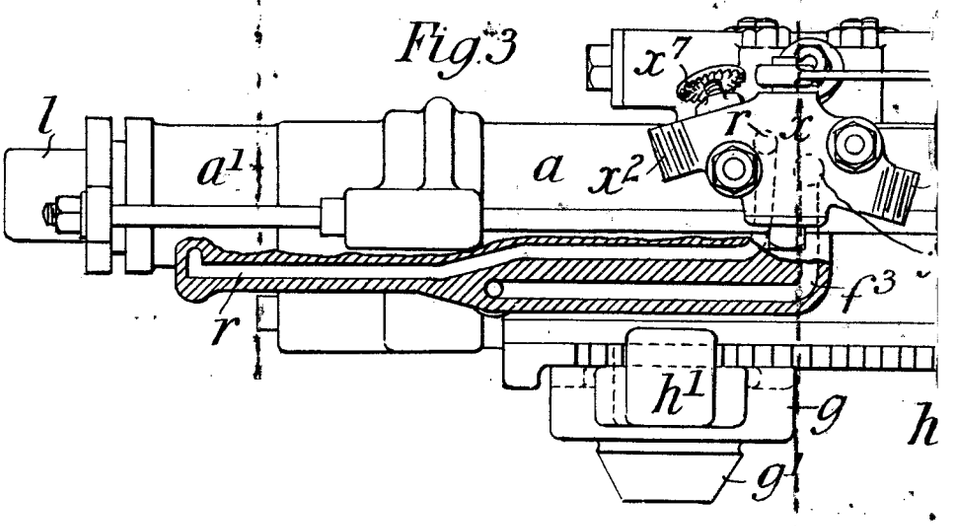


Fig.3.



1.

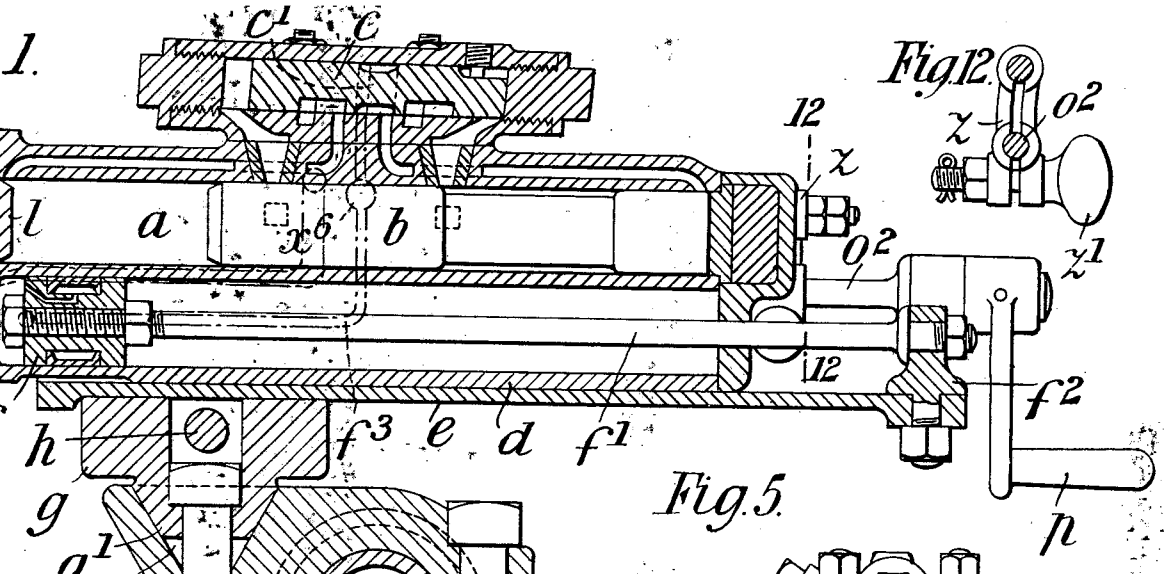


Fig.12.

Fig.5.

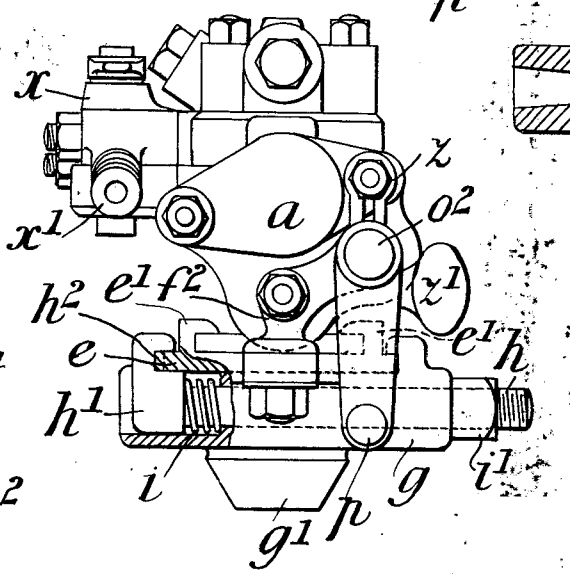


Fig.7

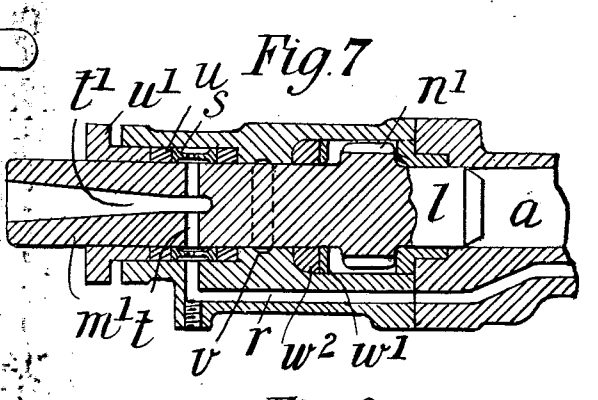


Fig.13.

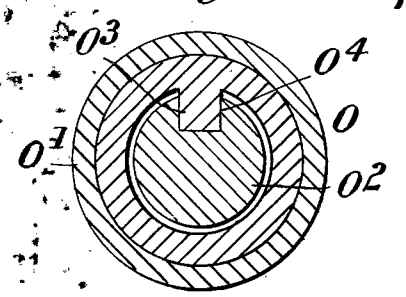


Fig.8.

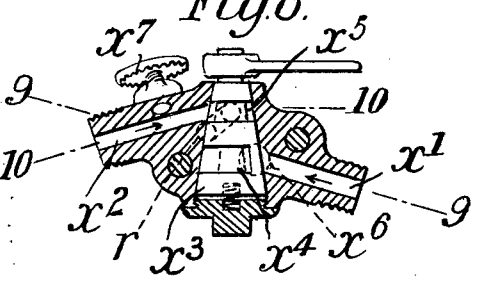


Fig.2.

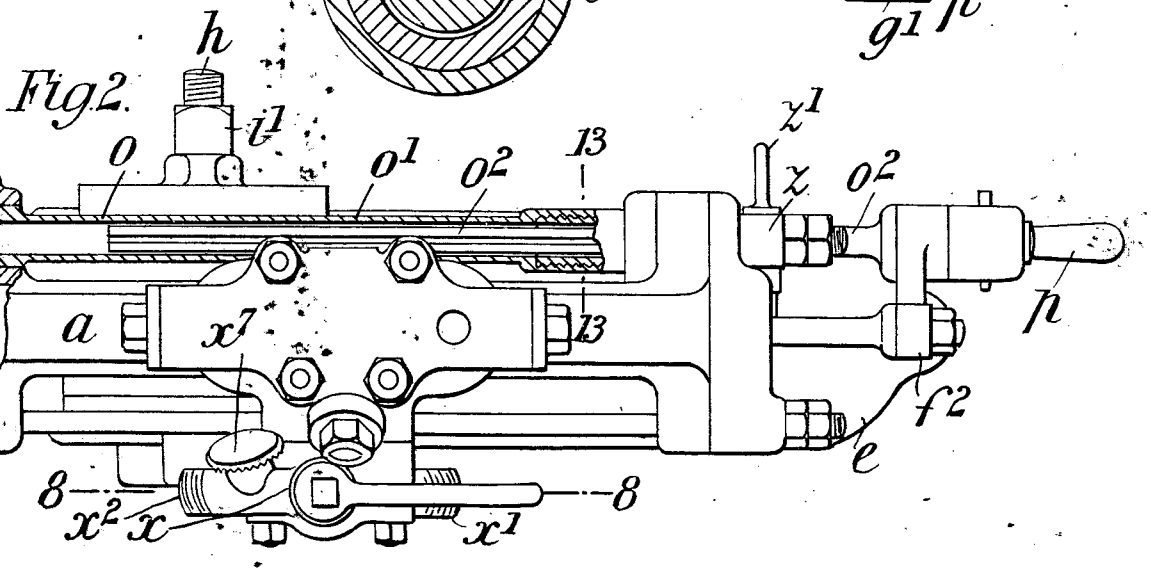


Fig.9.

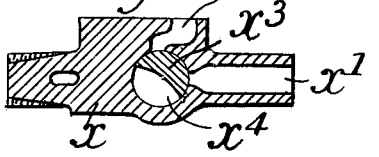


Fig.10

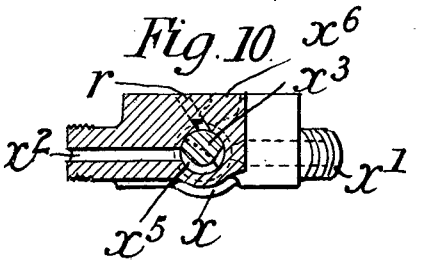
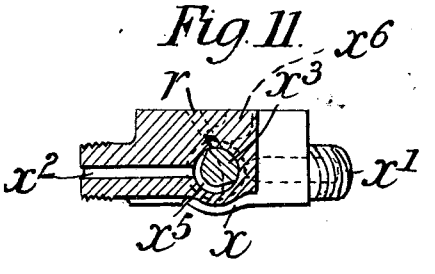


Fig.11.



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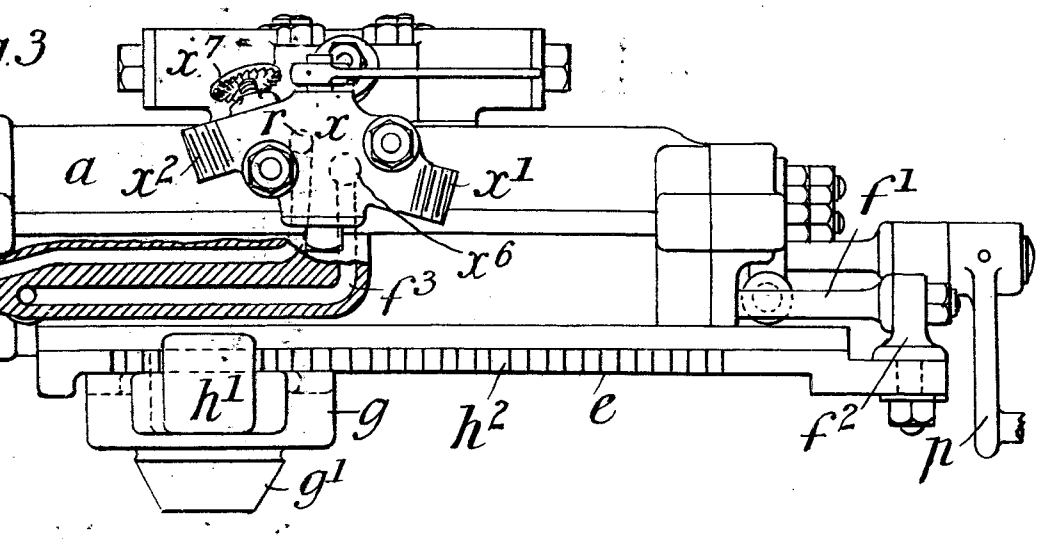
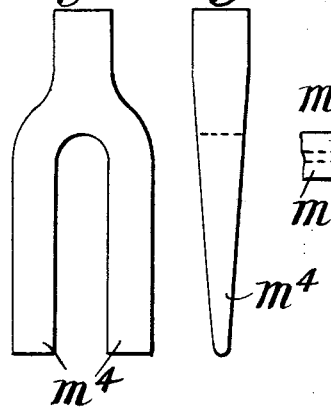


Fig.15. Fig.16.



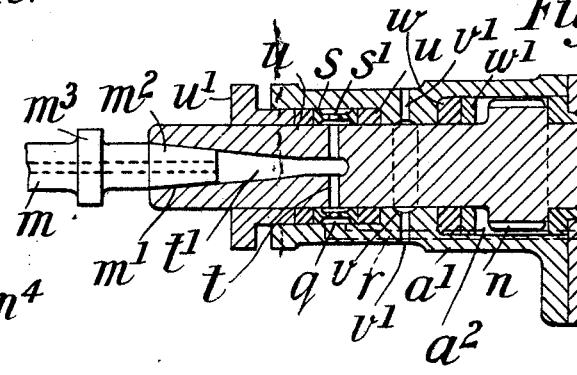


Fig.14.

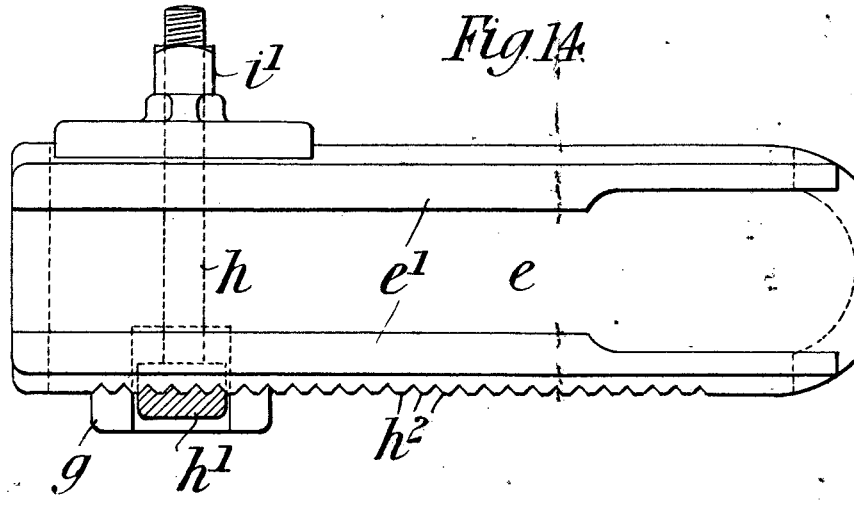
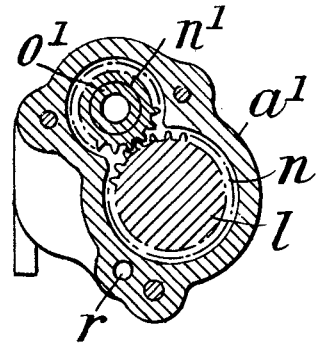


Fig.6.



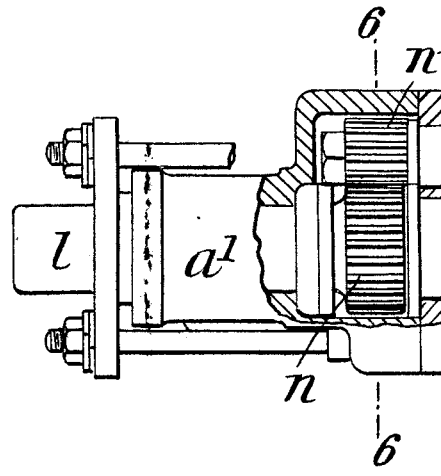
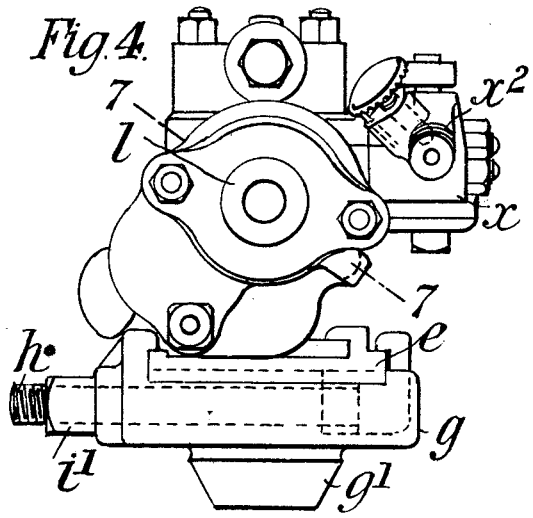
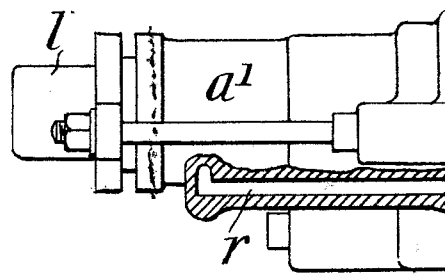


Fig.4.





14

POWER OF ATTORNEY

Rs 5/-

In the matter of The Inventions and Designs Regulation, XI of 1894, of the Government of Mysore:

a n d

In the Matter of William Charles Stephens, of Carn Brea, in the County of Cornwall, England, Engineer, an Inventor.

I, the above named William Charles Stephens, do hereby retain, constitute and appoint Messrs. L. A. DePenning & Mr. H.A. DePenning of Messrs DePenning & DePenning of 19 Watkins Lane, Howrah, Calcutta, as my Agents and Attorneys to apply for and obtain from the Government of Mysore an Exclusive privilege for "IMPROVEMENTS IN OR CONNECTED WITH PERCUSSIVE ROCK DRILLS", and to maintain the same in force; and I authorize them to sign my name to such papers and writings and do such acts regarding the same, including substitution and revocation, as may be necessary or expedient. And lastly, I request that all notices, requisitions and communications now or hereafter relating to the same may be sent to such Agents at the above address, and that they be recognized as my authorized Agents in all proceedings incident thereto.

Dated this 24th day of Septr 1908.

Signed, sealed and delivered by the above named William Charles Stephens } W.C. Stephens

at 4 South Street, Finsbury London, England

in the presence of -

John E Bousfield 4 South St Finsbury London Chartered Patent Agent

C Rodgers 4 South Street Finsbury London Chartered Patent Agent

COUPON TO BE RETAINED BY PAYEE.

[The Remitter may write here any communication to the Payee, and he is recommended to add his name and address for the information of the Payee.

Amount of Order Rs. 20 As. —

Name of remitter Messrs. De Penning & De Penning

Fee for the two Appls. for Patents in Mysore of Mr W. Le Stephens

Receipt acknowledged

29/10/08

Folio 8 V

29/10/08

2 drafts

G.R.S. 26]

G. M. File No. 165 -08

Serial No. 2

Diary No. of letter replied to

No. G. 2760/Sec.
dy 9.11.08

General and Revenue Secretariat
( )
, the 190 .

To The State Geologist
in Mysore

Date of issue 9.11.08

Signed by Mr. S.P. Rajagopalachar

Has the honor to forward for favor of report under sec: 6 of the Mysore Inventions and Designs Regn: XI of 1894, with its accompaniments an application made by Messrs De Penning and De Penning of Calcutta on behalf of Mr William Charles Stephens, Engineer, England for leave to file a Specification of an invention for improvements in or connected with percussion rock drills

B. O.
SP
over.

for Secretary

Draft

SUBJECT.

VS
31/10/08

cpd
mer 5/11

Money & cover signed
2 drafts

9/11/08

2088

G.R.S. 26]

G. M. File No. 165-08
Serial No. 3

Diary No. of letter replied to 1814

No. G 276/08

General and Revenue Secretariat
( )
, *the* 190 .

To The Officer in charge of the State Huzur Treasury, Bangalore

Date of issue 9.11.08

Signed by Mr. S. P. Rajagopalachari

Has the honor to forward herewith Rs 101- being the application fee received from ~~Mr Charles~~ Mr William Charles Stephens, Engineer, England, through his agents Messrs De. Penning & De. Penning of Calcutta for leave to file a specification of an invention for "Improvements in or connected with percussion rock drills," under Inventions and Designs Regn. XI of 1896, and to request an acknowledgment.

B. O.

SPK

over.

for Secretary

Draft

SUBJECT.

VS

31/10/08

C&PO
over
8/11

SVSA

No. 163

E. M. 165 of 1908-09.

Received from The Secretary to Gov
of Mysore Genl Revs Dept.

the sum of Rupees Ten only being the

from Mr William Charles Ketchens. Engr
Messrs de Penning & de Penning Calcutta,
an invention for "Improvements in or Co
Rock drills" and Credited this day V. In

H. H. The Maharaja's State Huzur Treasury,
Bangalore, 10 November 1908

Exd.

Hd. Acctt. ~~Bakshi.~~ Treasurer Treasury Officer

B.P. G.M. 7. 165-08-5

[G.D 13]

MYSORE GEOLOGICAL DEPARTMENT,

DATED BANGALORE, 24 November 1908.

No. 1429
Encl-1

D. 2185

From

DR. W. F. SMEETH, M.A., D.SC., A.R.S.M., &c.,
State Geologist in Mysore.

To

K.S. Chandrasekhara Iyer, Esquire, B.A.,B.L.,
Secretary to the Government of His Highness
the Maharaja of Mysore,Gen.& Rev. Depts.

SIR,

In reply to your docket No.G.2760/G.M.165-08-2, dated 9th November 1908, forwarding for report an application from Messrs. De Penning and De Penning of Calcutta on behalf of Mr.William Charles Stephens, Engineer, England, for leave to file a specification of an invention for "improvements in or connected with percussion rock drills", I have the honour to state that the invention relates to several attachments to be applied to percussion rock drills. These are as follows:-

(1) A feed cylinder and piston actuated by air pressure and situate alongside the hammer cylinder instead of behind it, as is usually the case. This makes the whole machine shorter and handier or would permit of a longer travel.

(2) A cradle which is moveable on its support and can be fixed thereto by a locking device which is described.

This enables the cradle and with it the feed piston to be moved forward so that a further feed can be obtained without shifting the machine bar

(3)

GPB—300—17-1-08

(3) A series of gear wheels for rotating the drill actuated by a telescoping shaft.

(4) A clip to prevent the cylinders from slipping when the air is turned off from the feed cylinder or to act as a brake.

2. All of the above points are clearly described and suitably constructed and are, in my opinion, useful and novel.

3. The leave applied for may therefore be granted.

4. The enclosures to your docket under reply are herewith returned.

I have the honour to be,

Sir,

Your most obedient servant,

C.M.

State Geologist in Mysore.

GOVERNMENT OF MYSORE.

General Department.

Invention Register No. 9 of 1908/9

Bangalore, the _____ 190 .

WHEREAS an application, dated the 24th day of Sept.r '08 and received on the 29th day of Oct.r '08, has been submitted under Section 5 of the Mysore Inventions and Designs Regulation, 1894, by William Charles Stephens of Carn Brea, in the County of Cornwall (England), Engineer

(hereinafter referred to as "the applicant") for leave to file a specification of an invention for "Improvements in or Connected with Percussive Rock Drills"

And whereas the applicant has duly complied with all the requirements of Section 5 of the said Regulation;

The Government of Mysore are pleased, under Section 6 of the said Regulation, to authorize the applicant to file a specification of the said invention in accordance with the provisions of the said Regulation.

ORDERED, that the applicant be, and he is hereby, informed accordingly.

By Order of the Government of Mysore,

for *Secretary to the Govt. of Mysore,*
Gen. and Rev. Depts.

Certified that the fees prescribed in the fourth schedule to the Mysore Inventions and Designs Regulation, 1894, in respect of the application for leave to file the said specification and of the filing thereof have been paid by the applicant, and that the specification hereinbefore described has been duly filed in accordance with the provisions of Section 8 of the said Regulation on this the 21st day of _____ 190 .

for *Secretary to the Govt. of Mysore,*
Gen. and Rev. Depts.

(*Section 8 of the Inventions and Designs Regulation*, 1894.)

8. (1) If within six months from the date of an order under Section 6, Sub-Section (1), or within such further time, not exceeding three months, as the Government of Mysore, in its discretion, may, on cause shown to its satisfaction and on payment of the fee prescribed in that behalf in the fourth schedule, see fit to allow, the applicant causes a specification of his invention to be filed in manner by this Part required, and the fee prescribed in the fourth schedule in respect of the filing of the specification to be paid, the applicant shall, subject to the other provisions of this Part, be entitled to the exclusive privilege of making, selling and using the invention in the Territories of Mysore, and of authorizing others so to do, for a term of fourteen years from the date of the filing of the specification.

(2) But an exclusive privilege in respect of an invention of a new manufacture shall, notwithstanding anything in Sub-Section (1), cease, if the inventor fails to pay, within the time limited in that behalf by the fourth schedule, any fee prescribed in that schedule in respect of the continuance of the privilege

(3) If, nevertheless, in any case, by accident, mistake, or inadvertence, an inventor fails to pay any such fee within the time so limited, he may apply to the Government of Mysore for an enlargement of the time for making the payment.

(4) Thereupon the Government of Mysore may enlarge the time accordingly, on payment of the fee prescribed in that behalf in the fourth schedule, and subject to the following conditions, namely :—

(*a*) the time for making a payment shall not in any case be enlarged for more than three months ; and

(*b*) if any suit is instituted in respect of an infringement of the exclusive privilege committed after a failure to make a payment within the time limited for the making thereof and before the enlargement of that time, the Court disposing of the suit may, if it thinks fit, refuse to award or give any damages in respect of the infringement.

MGCPB—200—11-12-01.

G.R.S. 26] 2878 21

File No.

Serial No.

Diary No. of letter replied to 2185

No. G. 3400

G.H. 165-08

2-4-09

General and Revenue Secretariat

( )

, *the* 190 .

To Messrs DePenning & DePenning
19, Watkins Lane,
Howrah,
Calcutta

Date of issue 4.12.08

Signed by [illegible]

Gentlemen,

With reference to your letter dated the 26th October 1908 forwarding an application from William Charles Stephens of Carn Brea in the County of Cornwall (England) Engineer, for leave to file a specification in respect of an invention for "Improvements in or connected with Percussive rock drills", I am directed to transmit herewith Govt order no G. 3399 G.H. 165-08 of

+ bearing Reg: no 9 of 1908-9

over.

SUBJECT.

issued in the name of the applicant refd to above and to request that the order may be communicated to the applicant & an acknowledgment sent to this office therefor.

I have &c

[signature]

for Secy to Govt.

BOS
1/12/08

List of enclosures.

Copied by [illegible]

Examined by [illegible]

MGCPB—30,000—16-2-05

COUPON TO BE RETAINED BY PAYEE.

[The Remitter may write here any communication to the Payee, and he is recommended to add his name and address for the information of the Payee.]

Amount of Order Re. 60 As 0

Name of remitter Hetmsing Shah

Spcn. fees.
W.C. Stephens Pkg. No. 10
of 1908/09.

22/1/08

T o a l l w h o m i t m a y c o n c e r n

B e i t k n o w n t h a t I, WILLIAM CHARLES STEPHENS of Carn Brea, Cornwall England, Engineer, am in possession of an invention for "IMPROVEMENTS IN OR CONNECTED WITH PERCUSSIVE ROCK DRILLS" and I, the said WILLIAM CHARLES STEPHENS do hereby declare the nature of the said invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement thereof, that is to say:-

My invention relates to percussive rock drills of the hammer type and to that class of such drill wherein the feed motion is automatically effected by

air pressure, the chief object of my invention being to construct a drill of this class which is considerably shorter than drills of the same class as heretofore constructed and wherein the feed cylinder has been arranged behind and in alignment with the hammer cylinder, the advantages of a short drill being not only that the drill may be worked in more cramped and narrow places or galleries than the longer class of drill but that a relatively long hole can be bored by means of a single drill bit and without the necessity for moving the support or fixing for the drill.

According to my invention the feed cylinder instead of being arranged behind and in alignment with the hammer cylinder is arranged parallel or side by side with the same and preferably beneath it, the said feed cylinder being adapted to slide upon a suitable cradle to which is also anchored or secured the rod of the piston within the feed cylinder.

To enable my invention to be fully understood I will describe it by reference to the accompanying drawing, in which:-

Figure 1 is a longitudinal sectional elevation of a percussive rock-drill constructed according to this invention and adapted to carry a hollow drill for the supply of water to the bore-hole.

Figure 2 is a sectional plan, and

Figure 3 a sectional side elevation thereof.

Figures 4 and 5 are respectively a front-end view and a rear end sectional view of the drill.

Figure 6 is a section on the line 6-6 figure 2, and

Figure 7 is a section on the line 7-7, figure 4.

Figure 8 is a section on the line 8-8, figure 2 and

Figures 9 and 10 are respectively sections on the lines 9-9 and 10-10 figure 8.

Figure 11 is a similar view to figure 10 showing a different position of the parts.

Figure 12 is a section on the line 12-12, figure 1 and

Figure 13 is an enlarged section on the line 13-13, figure 2.

Figure 14 is a plan of the cradle detached.

Figures 15 and 16 are views at right angles of a tool for removing the drill bit from its holder.

a is the main or hammer cylinder, b the piston thereof, and c the valve for controlling the supply of motive fluid to the said piston from the passage c' all of which parts are of usual construction.

d is the feed cylinder arranged parallel with the cylinder a and preferably beneath it and e is the cradle upon which the cylinder d is adapted to slide in guides e', e'. f is the piston of the feed cylinder the rod f' of which is anchored or secured to a bracket f^2 on the back of the cradle. This piston may be of any suitable type but is advantageously of the type wherein the pressure fluid acts behind the piston rings to hold them in close contact with the surface of the cylinder to prevent leakage, as shown clearly in figure 1.

The motive fluid is admitted in front of the piston f through a port f^3 from a distributing tap or cock hereinafter described, so that the pressure acting against the said piston and the front of the

feed cylinder serves to push the said cylinder together with the hammer cylinder forwards.

The cradle e is not permanently fixed to the support g for carrying the drill but is made movable thereon so that when the hammer and feed cylinders have been moved forward to an extent which is limited by the length of the cradle, the said cradle, which is normally locked to its support may be temporarily released therefrom to allow of its being pushed forwards upon the said support to permit of the cylinders again being fed forward in the cradle to increase the depth of the hole being drilled. It will thus be understood that a hole may be drilled the length of which is practically twice as great as the amount of movement provided for in the cradle, and this without changing the drill bit, as during the time that the cradle is being pushed forwards, as hereinbefore described, the drill bit will be bearing against the back of the hole and so prevent the cylinders from being pushed forward with the cradle.

Any suitable means may be provided for locking the cradle e to its support g. In practice I find it advantageous to provide in conjunction with the cradle guides e', e' a bolt h having a serrated or notched head h' which engages with corresponding serrations h^2, h^2 formed on the side of the cradle as shewn clearly in figure 14, the said bolt, when tightened up, locking the cradle e and support g together.

The bolt h has arranged in conjunction with it a spring i, the normal tendency of which is to disengage the serrated head h' from the cradle serrations h^2 when the tightening nut i' is released in order to obviate the necessity for moving the bolt by hand, and

the tightening bolt h and nut i' are provided with a quick thread so that a slight turn of the said nut will be sufficient to allow of the disengagement.

The cradle support g is advantageously formed with a conical base g' which fits into a correspondingly shaped socket j on the bracket j' by means of which the drill is carried on the usual supporting bar or stand k, this arrangement of cone and socket allowing of the ready adjustment of the drill.

The bolster l against which the hammer piston b operates and which carries the drill bit m is rotated to twist the bit by means of gearing, a series of teeth n around the bolster being engaged by a gear wheel n' mounted on a telescopic shaft o, the telescoping sections o', o^2 thereof being secured respectively to the said gear wheel n' and to the bracket f^3 upon the cradle e so that the shaft o will extend as the feed proceeds. The two sections of the telescopic shaft are connected together in such a manner that whilst capable of moving longitudinally there is no relative motion of rotation between them. In the drawings this is effected by a key o^3 on the part o' engaging a keyway o^4 in the part o^2. The portion o^2 ~~engaging~~ of the shaft o carried by the cradle e is provided with a handle or lever p for imparting rotary motion as the drilling proceeds.

For supplying water to the hollow drill m I advantageously provide the following arrangement, that is to say, around the bolster l within the head a' I form a recess q into which the water is delivered through a passage r from the distributing tap or cock hereinafter described.

In the said groove or channel q I arrange a ring s grooved on its inner and outer surfaces, the said grooves being connected by holes s' so that water passing from the passage r flows around the outer groove and through the holes s' to the inner groove, holes t being provided in the bolster so that the water can then flow into the central hole t' communicating with the bit m. The ring s is ∅located between two pieces of packing u, u a packing gland u' also entering the recess q to maintain the said packings tight around the bolster. Y is a groove formed in the head a' and open to the air by holes v', v' so that any leakage of water past the packings u, u can escape. The chamber a^2 in the head a' in which the teeth n on the bolster are located is also provided with a piece of packing w and metal washer w' to prevent access of any water.

For controlling the supply of pressure fluid to the main piston and feed piston and of water to the drill bit m I employ a single tap or cock x having inlets x' and x^2 for the supply of the pressure fluid and water respectively. The plug x^3 of the cock is formed with recesses x^4 and x^5, the recess x^4 being designed to connect the inlet x' with the port x^6 which is formed in one with the ports c' and f^3 for supplying the main and feed cylinders whilst the recess x^5 is designed to bring the inlet x^2 into communication with the passage r to the drill bit m. The recess x^5 is so arranged relatively with the recess x^4 that when the plug x^3 is turned slightly, when starting the drill, the water supply is first effected, the water passing to the cutting edges of the bit before the drill com-

mences to work, and thus ensuring the free flow of water taking place before striking the rock to be drilled so that cut portions of rock are prevented from choking the hole in the bit. By further rotation of the plug x^3 the pressure fluid is then admitted to the cylinders a and d and the drill then commences to operate the water being full on. If it is found that the water supply is excessive I provide a screw valve or regulator x^7 in the inlet x^2 so that the supply can be diminished.

To prevent water leaking around the drill shank within the drill holder portion of the bolster, I provide a conical hole m^1 in the said holder, and I form the said bit with a correspondingly shaped shank m^2, which when jammed back into the hole m^1, makes a water tight joint.

For the extraction of this form of drill bit from the holder, I employ a collar m^3 on the drill bit, and I employ a forked wedge m^4 figures 15 and 16, which is placed between the said collar and the nose of the drill holder the fork embracing the drill shank. By a simple tap with a hammer the wedge forces the collar away from the drill holder, and so extracts the drill bit.

Although I have described the tap x in combination with my improved drill, the arrangement for preventing leakage between the bit and its holder and the means for extracting the bit from the holder I make no claim to these in this specification as they form the subject of another application of even date herewith.

I sometimes apply to the rear end of the hammer cylinder a clip z, which embraces either the rod of the feed piston, or the portion o^2 of the telescopic

shaft o, in the drawing it is shown embracing the latter, the chief function of this clip being to support the weight of the cylinder a to prevent its sliding through the cradle c when changing bits whilst boring holes at angles below or above the horizontal, and thus obviating the necessity for the operator to hold up the weight of the machine when changing the drill bit, or pointing the drill to the various angles; z' is a screw for gripping the jaws of the clip on the rod o^2. The said clip also acts as a brake when boring down holes in soft rock, to prevent too rapid feeding under these conditions.

Having now fully described and ascertained my said invention and the manner in which it is to be performed, I declare that what I claim is:-

1. In a percussive rock drill of the hammer type and wherein the feed motion is automatically effected by air pressure, the arrangement of the feed cylinder and hammer cylinder side by side and parallel with each other for the purpose of shortening the drill, substantially as described.

2. In a percussive rock drill of the hammer type wherein the feed is automatically effected by air pressure and wherein the feed and hammer cylinders are arranged side by side, mounting the said cylinder in a cradle to which the piston of the feed cylinder is attached and so that the cylinders can move relatively with the said piston upon the cradle, substantially as described.

3. In a percussive rock drill of the hammer type and wherein the feed is automatically effected by air pressure, and wherein the feed and hammer cylinders are arranged side by side, the combination with the feed and hammer cylinders and with the cradle in which the said cylinders slide, of a support in which the said cradle with the cylinders upon it is adjustable, sub-

stantially as described.

4. In a percussive rock drill of the hammer type and wherein the feed is automatically effected by air pressure, and wherein the feed and hammer cylinders are arranged side by side, the combination with the feed and hammer cylinders and with the cradle in which the said cylinders slide, of a support in which the said cradle with the cylinders upon it is adjustable, the said support being provided with a bolt for tightening it upon the cradle and the said bolt provided with a serrated head designed to engage with corresponding serrations on the side of the cradle for fixing the said cradle in any position relatively with the support substantially as described.

5. In a percussive rock drill of the hammer type and wherein the feed is automatically effected by air pressure and wherein the feed and hammer cylinders are arranged side by side, the combination with the feed and hammer cylinders, of a cradle in which the said cylinders slide and a support in which the said cradle is adjustable a conical base upon the said support fitting a correspondingly shaped socket on the bracket by means of which the drill is carried on the usual supporting bar or stand so that the drill can be readily moved to any position, substantially as described.

6. In a percussive rock drill of the hammer type and wherein the feed is automatically effected by air pressure, and wherein the feed and hammer cylinders are arranged side by side, the combination with the feed and hammer cylinders and with the cradle in which the said cylinders slide of gearing for rotating the drill bit and of a telescoping shaft for operating the said gearing, substantially as described.

7. In a percussive rock drill of the kind wherein a hammer cylinder and feed cylinder are arranged side by side in a cradle the provision of a clip for locking the cylinders to the cradle when the air supply is shut off from the feed cylinder and to act as a brake when boring holes in soft rock, substantially as described.

8. A percussive rock drill constructed arranged and operating substantially as hereinbefore described and illustrated in the accompanying drawings.

Witness -

A. J. Boult

4 South Street, Finsbury, London

W. C. Stephens

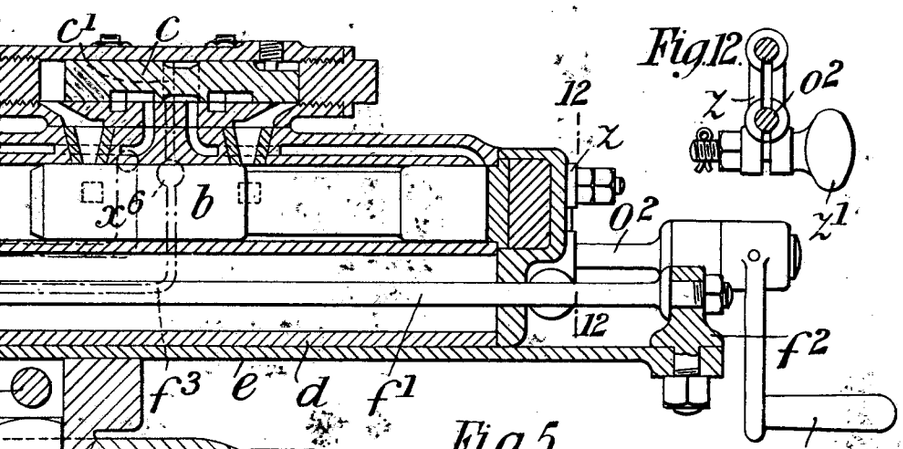
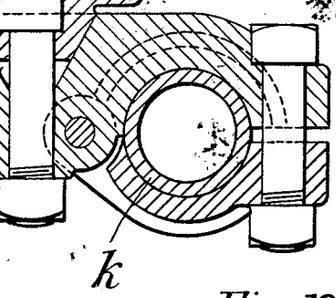


Fig.12.

Fig.5.



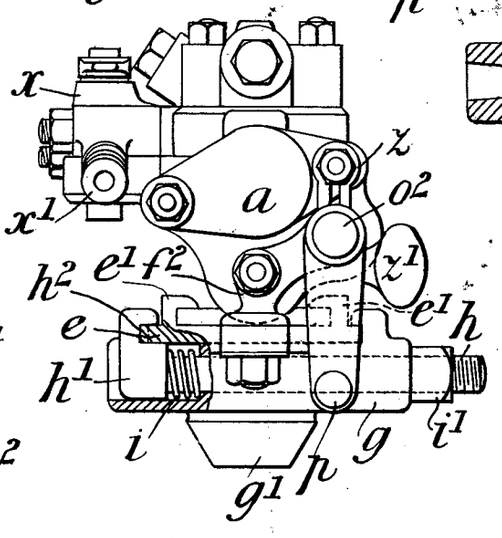
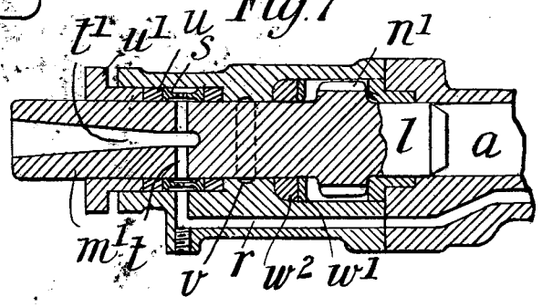


Fig.7



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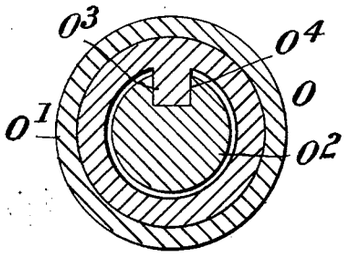
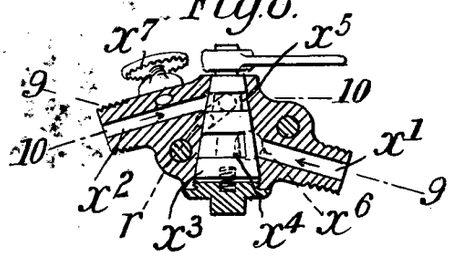


Fig.8.



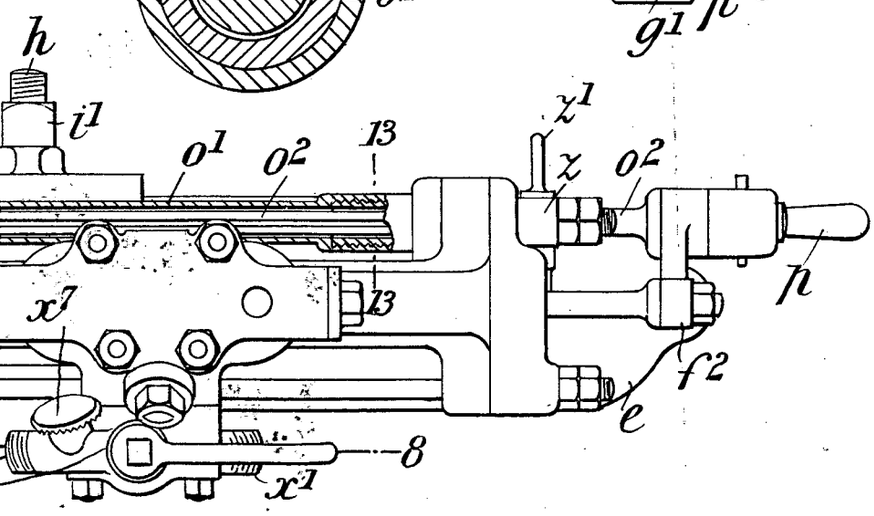


Fig.9.

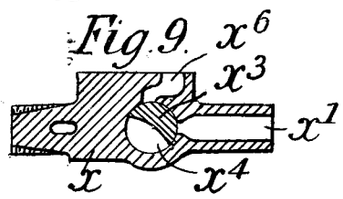
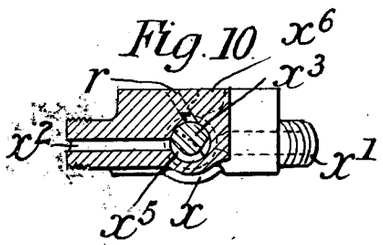


Fig.10.



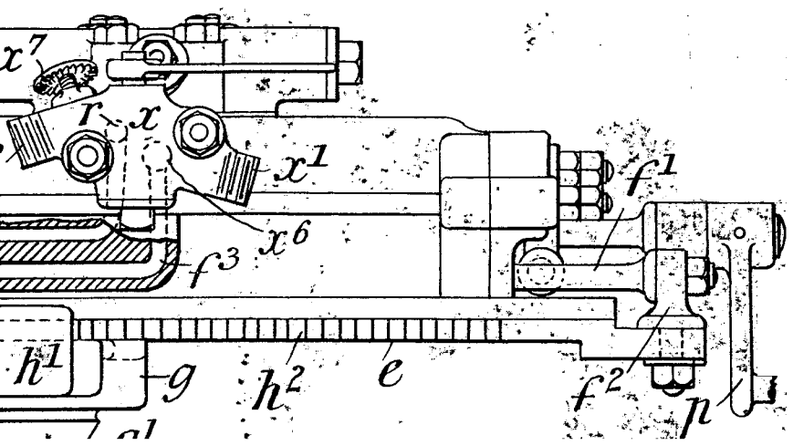


Fig.11.

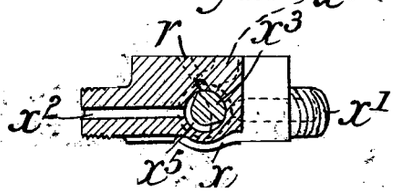


Fig.15. Fig.16.

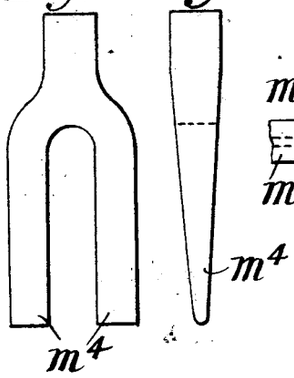


Fig.1.

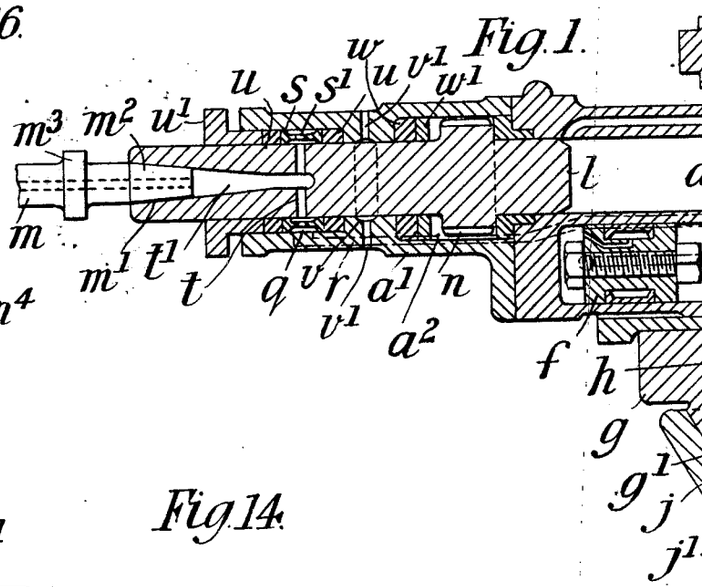


Fig.14.

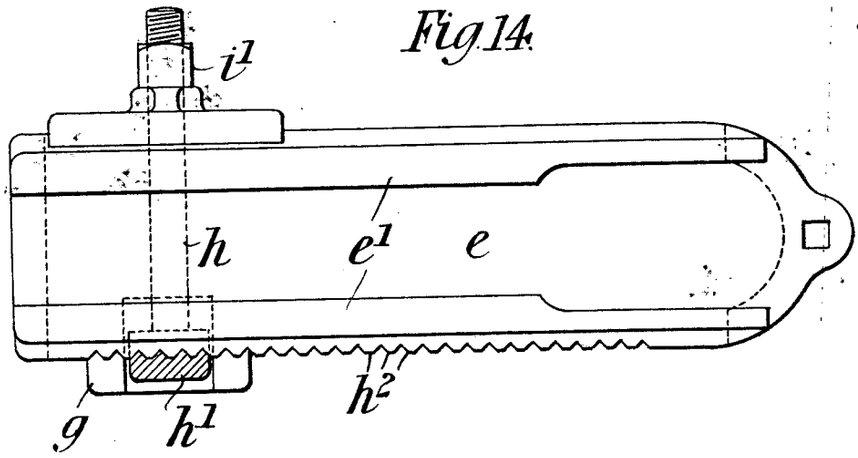


Fig.6.

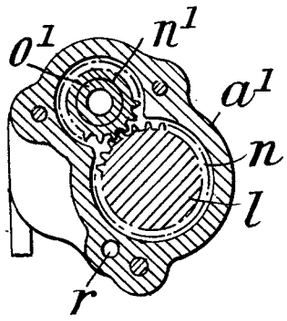


Fig.2.

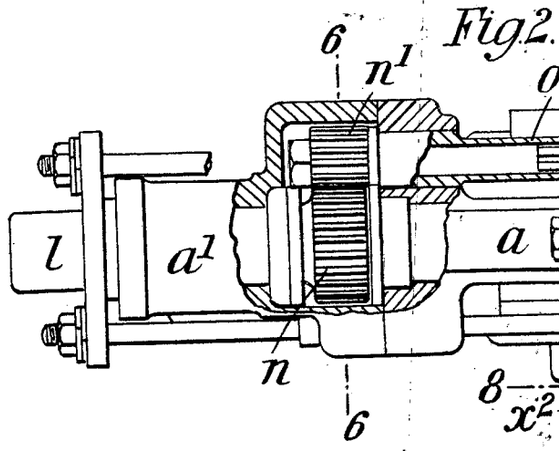


Fig.4.

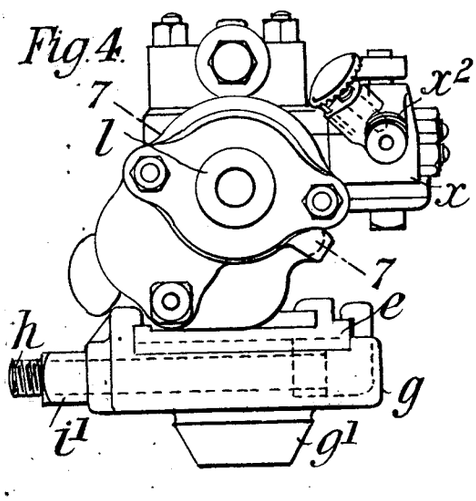
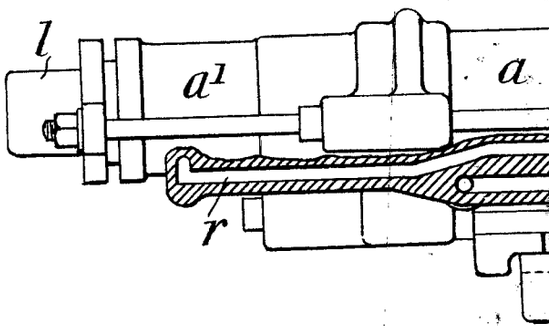


Fig.3.



G.R.S. 29A]

190

From

Secy. to the Govt. of His Highness the Maharaja of Mysore, Genl. and Rev. Dept.

To

Officer in charge
P. H. Trg.

Dated
Despatched } 7. 1. 09.

Received

General No. G. 3919

No. G. M. 165-08-9.

Enclosure No. Rs 30

Has the honor to forward herewith, a sum of Rs 30 being the fee received in respect of the filing of a specification of an invention for "Improvements in or connected with Percussive Rock Drills" by Mr W. E. Stephens of Cornwall - & to request the favour of an acknt

I. O.

MGCPP—20,000—6-2-05.

No. G.3920

Q.M. 165-08-10

MYSORE GOVT. GEN. & REV. SECRETARIAT,

Dated Bangalore, 7. 1. 1909.

Tr. 534
8. 1. 09

NOTIFICATION.

(PATENT.)

The following specification of an invention has been filed in accordance with Sections 8, 9, 10 and 11 of Regulation XI of 1894 (The Inventions and Designs Regulations) and is open to inspection at the Mysore Government Secretariat on application to the Secretary to the Government of His Highness the Maharaja of Mysore, General and Revenue Departments, and on payment of a fee of one Rupee.

By William Charles Stephens of Coom Brea in the county of Cornwall (England), Engineer.

"Invention for improvements in or connected with Percussive Rock Drills"

By Order,

C. Balasundaramiyer
for Secretary.

V.S
30.12

To

The Compiler, *Mysore Gazette*, for publication.

V.S

Exc. 6/1

MYSORE GOVT. GEN. & REV. SECRETARIAT,

No. 9 3921 Enc 2-
Gm 165-08-16

Dated Bangalore, 7. 1 ...190 9

From

The Secretary to the Government of H. H. the Maharaja of Mysore,
General and Revenue Departments.

To Messrs De Penning & De Penning
19, Watkins Lane, Howrah,
Calcutta

SIR,

With reference to your letter ~~dated~~ 20 24/8/19-12-08 I am directed to forward copy of a Notification No. 9 3920 / Gm 165-08-16 dated 7th Jan 09 issued by this Government in regard to the invention filed by you under Regulation XI of 1894, (The Inventions and Designs Regulation).

The order granting permission to file specification is herewith returned, with the certificate at foot, duly filled in and signed.

I have the honor to be,

Sir,

Your most obedient servant,

C.B. Balasundaram
for Secretary.

G.R.S. 29A]

190

From

Secy. to the Govt. of His Highness
the Maharaja of Mysore,
Genl. and Rev. Dept.

To X.

Supt Govt Museum
State Geologist
Chief Engineer.

Dated 7.1.09
Despatched
Received
General No. C. 3922-4
No. Gen 165-08-12.

Enclosure No. 1

Have the honor to forward herewith for record in his office a copy of the Specification of an invention for "Improvements in or connected with Percussive Rock Drills" by Mr. W.C. Stephens of Cornwall. and to request the favour of an acknt

By order,
Secy.

MGCPT—20,000—6-2-05.

G. M. 165-08-13

V 5891/09

No [redacted] 195-09 D. No. 2877 G

Received from The Secretary to the Go
the Maharaja of Mysore, General and R

the sum of Rupees Thirty only being

of an insertion by Mr. W.C. Stephens

Credited this day Vide No Cy 3919

Cy. No 16

H. H. The Maharaja's State Huzur Treasury,
Bangalore, 8-1-1909

Exd.

Hd. Acctt. ~~Bakshi.~~ Treasurer

Treasury Officer, Sta

V 591 CW D. No. 2872

1908—09.

From

G. H. Krumbiegel, Esq
Superintendent,
Government Museum

To

K.S. Chandrasekharaiyer B.A. B.L.
Secretary to the Govt of
H.H. the Maharaja of Mysore
General and Revenue Dept.

Dated 8th January 1909.

Despatched

Received G.M. 165-08-14

General No. 115

No.

Enclosure No.

Sir,

I have the honor to acknowledge the receipt of a copy of the specification of an invention for "Improvements in or connected with Percussive Rock Drills" by Mr W.C. Stephens of Cornwall forwarded with your No G 3922-4 Dated 7th instant. G.M 165-08-12

I have the honor to be,
Sir,
Your most obedient servant

Superintendent

No. 107

MYSORE P. W. DEPARTMENT.
CENTRAL OFFICE,
Bangalore, 11th January *190* 9.

From

W. McHUTCHIN, ESQ., M.I.C.E.,
Chief Engineer of Mysore,
Bangalore.

G. M. 165-08-15

To

The Secretary to the Government of
His Highness the Maharaja of Mysore,
General and Revenue Departments,
B A N G A L O R E.

SIR,

I have the honor to acknowledge receipt of a copy of the specification of an invention for "Improve--ments in or connected with Percussive Rock Drills" by Mr. W. C. Stephens of Cornwall, forwarded with your No. G. 3922-4 / G.M. 165-08-12 dated the 7th instant.

I have the honor to be,

S i r,

Your most obedient servant,

For Chief Engineer of Mysore

A. P. R.

GPB—2,000—24-9-07

V Cir II CR D. No. 2948.

190 9

MYSORE P. W. DEPARTMENT.

No. 107

From

THE CHIEF ENGINEER OF MYSORE,

Bangalore.

To The Secy to the Govt of Mysore
Genl & Revenue Depts.

Dated Bangalore, 11-1-09

Despatched 12-1-09

Enclosure *No.*

SUBJECT.

Wendell

Cw

Rec. No. 3051

M G D 13]

MYSORE GEOLOGICAL DEPARTMENT,

DATED BANGALORE, 18th January 1909.

No. 1813.

G. M. 165-08-16

From

DR. W. F. SMEETH, M.A., D.SC., A.R.S.M., &c.,
State Geologist in Mysore.

To

K.S. Chandrasekhara Iyer, Esquire, B.A.,B.L.,
Secretary to the Government of His Highness
the Maharaja of Mysore,Gen.& Rev.Depts.

SIR,

I have the honour to acknowledge the receipt of a copy of the specification of an invention for "Improvements in or connected with Percussive Rock Drills" by Mr.W.C. Stephens of Cornwall, forwarded with your docket No.G.3922-4/G.M.165-08-12 dated 7th January 1909.

I have the honour to be,
Sir,
Your most obedient servant,

C.N.

State Geologist in Mysore.

GPB—300—17.1.08